5.5

Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

July 25, 2008

Ms. Anne Hedges
Montana Environmental Information Center
P.O. Box 1184
Helena, MT 59624

Ms. Jennifer Swearingen
Montanans Against Toxic Burning
P.O. Box 1082
Bozeman, MT 59771

Ms. Jenny Harbine
Earthjustice
209 South Willson Avenue
Bozeman, MT 59715

Response to 2008 Ambient Air Monitoring Network Plan Comments

Anne, Jennifer and Jenny:

Thank you for your comments regarding the Department of Environmental Quality's (Department) 2008 Ambient Air Monitoring Network Plan. The Department appreciates your comments on particulate matter (PM) air monitoring in the Gallatin Valley. The response will correlate roughly to the order of your letter received on June 25, 2008, starting with the second paragraph.

You mention the rapid population growth in the Gallatin Valley and the atmospheric inversions common to mountain valleys. DEQ air program personnel have long recognized the high frequency of atmospheric temperature inversions common to all mountain valleys of the Intermountain West. That phenomenon, along with a high local growth rate, are two of the main reasons why DEQ and its predecessor agency (DHES) have monitored for PM in the Gallatin Valley since the 1970s on an ongoing basis and why the Department intends to continue PM monitoring into the foreseeable future.

Over the last four decades, the U. S. Environmental Protection Agency (EPA) has revised the National Ambient Air Quality Standards (NAAQS) for PM several times, focusing on smaller and smaller particles each time. In 1987, EPA replaced the original Total Suspended Particle

(TSP) NAAQS with one for particles less than or equal to 10 microns (μm) in aerodynamic diameter (PM_{10}). In 1997, as a result of numerous epidemiological studies indicating more serious health effects associated with finer (smaller) particles, EPA promulgated a new, more stringent NAAQS for PM less than or equal to 2.5 μm in aerodynamic diameter ($PM_{2.5}$). EPA confirmed that finding in 2006 and made the 24-hour $PM_{2.5}$ NAAQS even more stringent. At that time, EPA also revoked the annual PM_{10} NAAQS because the annual $PM_{2.5}$ NAAQS is more protective of public health.

Over the last few years, the Department has evaluated its PM monitoring network in light of the new national emphasis on the finer particles. Except for the PM_{10} non-attainment areas (NAA), other areas with PM_{10} monitoring results below the NAAQS and where those results indicated stable or decreasing concentrations were transitioned from PM_{10} to $PM_{2.5}$ sampling. In the Gallatin Valley, the Department monitored for PM_{10} at the Belgrade site from 1991 through 2005, and at the Bozeman site from 1986 through 2002. The results are summarized in Figures 1 and 2 of Attachment 1 and they clearly indicate a downward trend in ambient PM_{10} concentrations, even as the population of the Gallatin Valley increased rapidly over the same time period. A review of the PM_{10} monitoring results from the other communities in western Montana exhibit a similar trend. In general, the decrease is due to better air pollution controls on permitted point sources and better area source controls (e.g., liquid deicers instead of dirty sand for wintertime traction control, increased sweeping to remove dirt from paved roads, and paving of dirt streets, alleys and parking lots).

Montana operates a state-wide ambient air monitoring network. Where to monitor and for what pollutants is based on a combination of professional staff judgment, the results of data analyses, federal requirements and public comments. The Department routinely monitors for PM (10 & 2.5 μm), carbon monoxide, sulfur dioxide, and several meteorological parameters. Some air pollutants (e.g., nitrogen dioxide, hydrogen sulfide) are rarely monitored for in Montana, and for other pollutants (e.g., lead, ozone) the monitoring has been scaled back or terminated. The Department locates air quality monitors based on a cost-benefit analysis in order to ensure our resources are carefully allocated to best protect public health given our resource limitations. Ideally, the Department would monitor for a variety of criteria and non-criteria air pollutants in most Montana communities. However, the reality is far different and the Department closely examines its priorities and available resources. In addition to the annual network reviews, all states will soon conduct a comprehensive assessment of their ambient air monitoring programs once every five years. The first one is due in 2010 and the Department intends to conduct an analysis of the ambient air monitoring needs for all criteria air pollutants, including PM_{10}.

In the short term, the Department intends to continue $PM_{2.5}$ monitoring at the Bozeman-Wastewater Treatment Plant (WWTP) site. Recently the Department installed a $PM_{2.5}$ Beta Attenuated Monitor (BAM) monitor at the WWTP site. BAMs sample continuously and report PM data on an hourly basis. This hourly data is also being made available to the public via the Department's Today's Air website (http://todaysair.mt.gov/AirMonitoring/AirDataMap.aspx). Hourly $PM_{2.5}$ BAM data is very useful to keep the public informed about air quality during summer wildfire events. Hourly data is also very important in evaluating the dynamics of pollution episodes during air stagnation periods resulting from temperature inversions during the winter months. However, commencement of construction for an expansion of the WWTP will

force relocation of the equipment to a different location this fall. The Department intends to locate a $PM_{2.5}$ monitoring site within the Bozeman City limits if a suitable location can be found that meets all of the specific regulatory criteria for locating an ambient air monitoring site. Those plans also include relocating the $PM_{2.5}$ BAM sampler from the WWTP site. Although your letter mentioned PM_{10} monitoring at the WWTP site, the Department has never monitored for PM_{10} at the WWTP site. The main Bozeman PM_{10} monitoring site has always been the City (Fire Station) Building near the intersection of Main and Rouse and it operated from 1986 through 2002 (Attachment 1 summaries the PM_{10} data).

The Department is not ignoring potential PM_{10} emissions in the Gallatin Valley. For example, potential PM_{10} emissions from point sources are limited using operating permits issued by the Department. The Department works with state and local road departments to reduce air pollution from motor vehicle operations. Most significantly, the Department also continues to work with interested parties in the Gallatin Valley toward the goal of establishing a local air pollution control program. As explained above, the Department conducted PM_{10} monitoring for almost 20 years in the Gallatin Valley (see Attachment 1). During that time period, PM_{10} emissions generally followed a downward trend, except for some normal fluctuations from year to year, and yet the human population markedly increased during the same time period.

Your letter commented on smoke from forest fires in 2007 and the ambient air monitoring coverage. The Department is very concerned about potential human health effects from exposure to wildland fire smoke. As a result, the Department installed three $PM_{2.5}$ BAMs monitors this summer at new sites in Billings, Great Falls and Bozeman. The $PM_{2.5}$ BAM data from the WWTP site will be extremely useful in informing Gallatin Valley residents about fine particle (smoke) exposure during wildland fire events and during wintertime air stagnation episodes. Because the vast majority of smoke particles fall into the sub-2.5 μm size range, ambient $PM_{2.5}$ samplers are the best choice for monitoring exposure to fine particles, such as wildfire smoke. Ambient PM_{10} monitors yield much less useful data about fine particle concentrations in the atmosphere.

Your last paragraph contains comments about the amount of PM data lost over the years at the monitoring sites in the Gallatin Valley. While unfortunate and regrettable, data has been and always will be lost for a variety of reasons. Failure to meet certain quality control and quality assurance (QA/QC) procedures results in the deletion of some data values. Typical QA/QC failures include sampler problems (parts breakage, air flow rate errors, or power failures) or human operator mistakes (setting the on/off timers incorrectly, forgetting to change the filter). Other less common reasons include filter weighing errors in the laboratory, or the lack of qualified field operators. Field operators have quit with little or no notice. Those unfortunate instances usually result in the loss of weeks of data while a new field operator is recruited and trained. However, in those counties with local air pollution control programs, field monitoring work is performed by the local program staff, resulting in higher data recovery rates, in part because the locals have a vested interest in the monitoring program and are better able to respond when equipment fails. However, no matter who is running the monitoring program, proper QA/QC procedures must be followed so compromised data is not included in an area's dataset. Minimum data recovery rates of 75% are required on a quarterly and annual basis. Data recovery rates are calculated by dividing the number of valid samples collected by the number of

samples scheduled to be collected on a calendar quarter and calendar year basis. The data recovery rates for the time period when both Gallatin Valley PM_{10} sites (Belgrade – ConAgra & Bozeman – City Building) operated concurrently are displayed in the two figures in Attachment 2. With a few exceptions, the 75% data recovery requirement was met. The recovery rates varied over time but no discernable pattern arises indicating a "significant increase in data being eliminated."

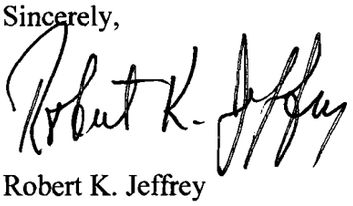
In closing, thank you again for participating in the annual review of Montana's ambient air monitoring network. The Department's air monitoring network plans for the Gallatin Valley, subject to potential reallocation of resources, currently include:

- Locating a new $PM_{2.5}$ monitoring site in Belgrade to replace the ConAgra site which will likely be lost to real estate development in the near future.
- Locating a new monitoring site in Bozeman for the continuous $PM_{2.5}$ BAM sampler.
- Conducting additional $PM_{2.5}$ sampling with portable monitors to better characterize the fine PM distribution in the Gallatin Valley.
- Working in partnership with the Gallatin County Board of Health and other interested parties to develop a local air pollution control program for Gallatin County.

The Department believes the Gallatin Valley is well represented in the ambient air monitoring network. The Department looks forward to working with you and other parties interested in protecting Montana's clean air resource. The Department further anticipates working with the organizations you represent and others to disseminate this and other helpful information in Gallatin County and to maximize our collective efforts to protect public health from the negative effects of air pollution.

If you have any other questions, please contact me. Thank you for your interest in clean air.

Sincerely,



Robert K. Jeffrey
Air Quality Specialist
Air Resources Management Bureau
MT Dept. of Environmental Quality
(406) 444-5280; fax 444-1499
Email: rjeffrey@mt.gov

cc: Stephanie Nelson, Gallatin County Health Department (w/attachments)

Attachments (2)

Attachment 1: Gallatin Valley PM_{10} Monitoring Data Trends, 1986-2005.

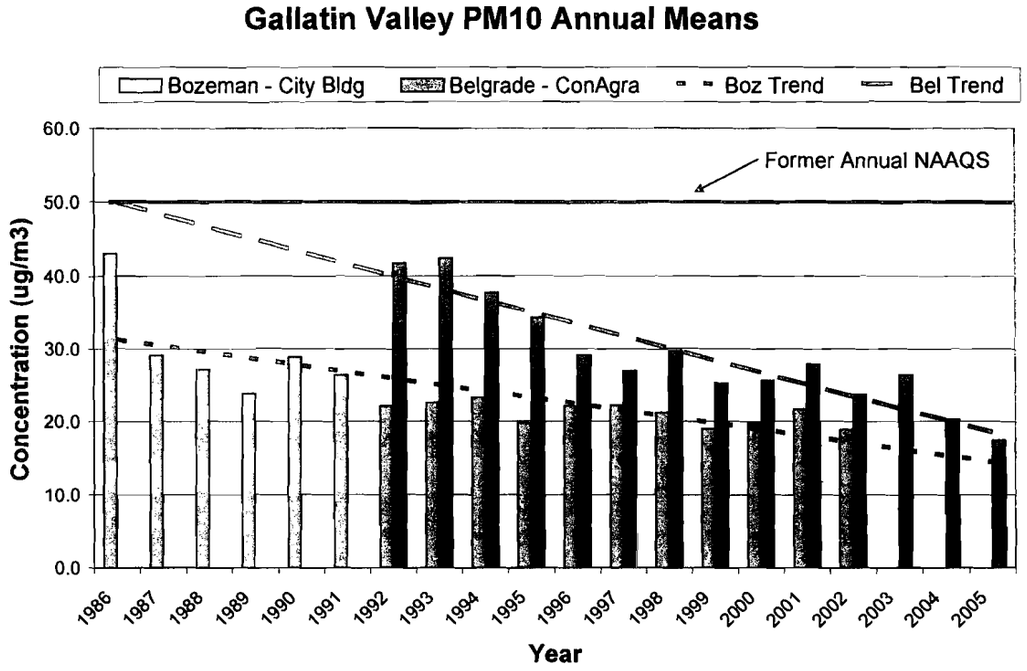


Figure 1. Bozeman & Belgrade PM10 Annual Means & Trends from 1986 – 2005

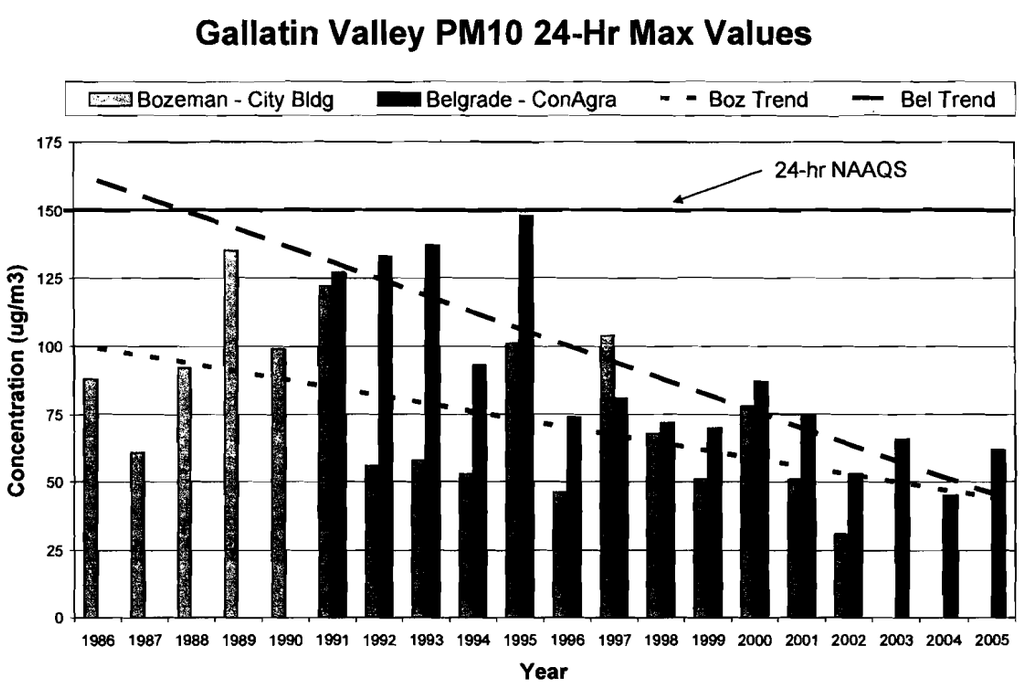


Figure 2. Bozeman & Belgrade PM10 24-Hr Maxs & Trends from 1986 – 2005

Attachment 2: Gallatin Valley PM_{10} Data Recovery Trends, 1993-2005.

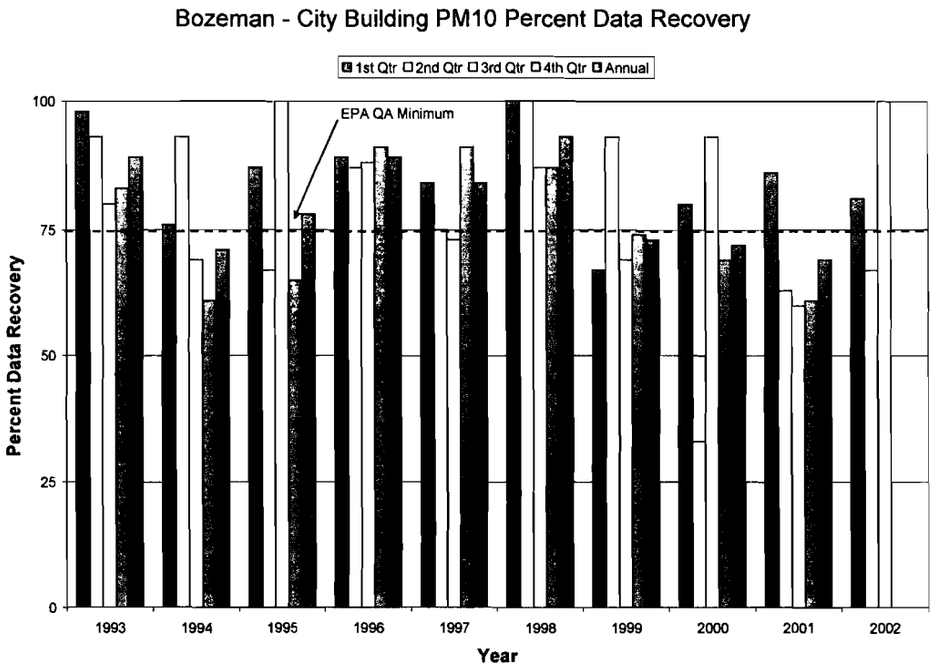


Figure 3. Bozeman – City Building PM10 Data Recovery Trend, 1993 – 2002

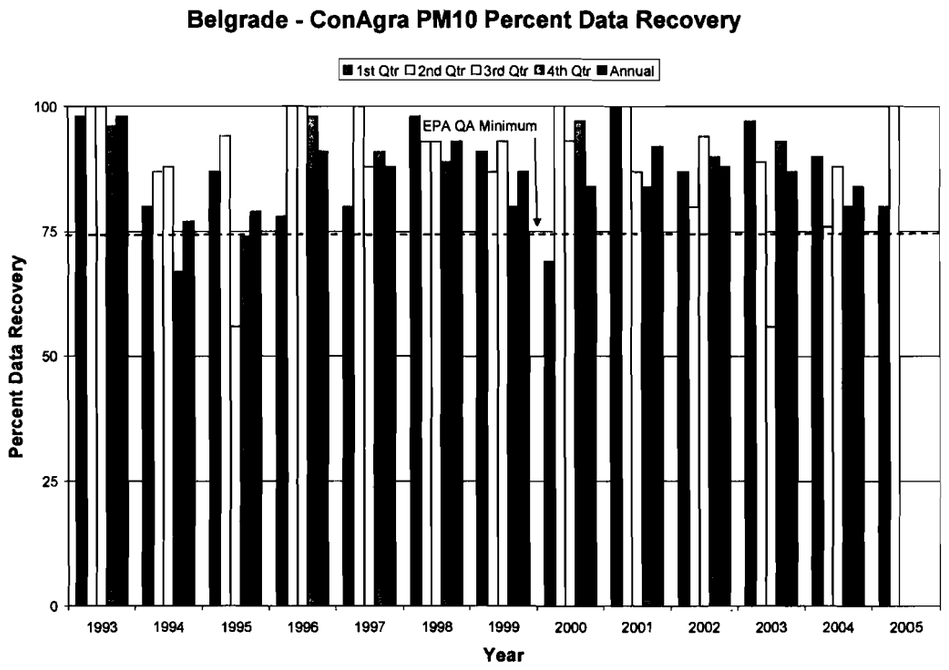


Figure 4. Belgrade – ConAgra PM10 Data Recovery Trend, 1993 – 2005